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OFFICE OF PETITIONS

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of: Junichiro Fujita et al

CASE NO. 6005

SERIAL NO. 09/965,096

GROUP ART UNIT: 1713

FILED: September 27, 2001

EXAMINER: Daniel E. Valencia

FOR: POLARIZATION INDEPENDENT WAVEGUIDE
OPTICAL ISOLATOR AND CIRCULATOR

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FEB 04 2004

OFFICIAL

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

AMENDMENT AND RESPONSE

This is in response to the office action mailed on September 13, 2002. A request for a three month extension to respond and fee accompany this response.

AMENDMENT

Please cancel: Claims 1-21.

22. (amended herein) A polarization independent optical isolator/circulator based on a nonreciprocal phase shifter comprising:

first and second Mach-Zehnder waveguide interferometers, each having an input port and an output port, and each one having two interferometer arms, with nonreciprocal phase shifters in the interferometer arms;

said phase shifters comprising a plurality of half-wave retarders or quarter wave retarders; and one or more Faraday rotators with a total rotation of 45°, wherein the slow axes of the retarders are either parallel or perpendicular to each other so that with phase or power compensation between the two paths by either active or passive means, a light that enters through one of the input ports is split in the first interferometer into two linearly polarized components and recombined into one of the output ports in the second interferometer.

23. (amended herein) The polarization independent optical isolator/circulator of Claim 22 wherein is disposed in one path of each interferometer a half-wave retarder.